

Technical Assistance Closure Report Template

Objective of the technical assistance (TA) Closure Report:

- To communicate publicly in one document a summary of progress made and lessons learned during the TA towards the anticipated impact (sections 1-4).
- To document qualitative and quantitative data collected during TA, for use in donor and UN reporting (Annex 1).

Steps for completing the TA closure report:

1. The lead TA implementer submits the closure report at the end of the technical assistance as a final deliverable. The TA closure report will capture outputs, outcomes and impacts of all activities conducted under the TA. Please copy and summarise relevant material from previous TA outputs/deliverables and the Response Plan, as relevant.
2. A CTCN Manager will review and revise the closure report before final approval by the CTCN Deputy Director.

Important note on public and internal use of the closure report:

Once approved by the CTCN Deputy Director, the TA closure report will be a public document available on the CTCN website www.ctc-n.org. Selected content will be used for targeted communication activities. Annex 2 is for internal use only and will not be publicly available.

Closure Report for CTCN Technical Assistance

1. Basic information

Title of response plan	Leapfrogging to Energy Efficient Appliances and Equipment in Eswatini (Refrigerators and Distribution Transformers)
Technical assistance reference number	2019000006
Country / countries	Eswatini
NDE organisation	Ministry of Tourism and Environmental Affairs
NDE focal point	Bafana Nicholus Simelane
NDE contact information	<i>bafanasim@gmail.com</i>
Proponent focal point and organisation	<i>Zamokuhle Ndlangamandla, Ministry of Energy and Natural Resources, zamasiwela@gmail.com</i>
Designer of the response plan	<i>CTCN</i>
Implementer(s) of technical assistance	<i>Instruction: Pegasys (Reevin Frank), AETEC (Pty) Ltd (Igor Djurdjevic), TTC (Pty) Ltd (Adesh Singh), Dr. Nicollete Mhlanga-Ndlovu, Fraunhofer Institute (Antoine Durand), Hamilton Malaza, Dr. Andrew Swanson, Ms. Elena Broughton</i>
Beneficiaries	<i>Instruction: Ministry of Natural Resources and Energy Ministry of Tourism and Environmental Affairs Eswatini Electricity Company Eswatini Energy Regulatory Authority</i>

	<p><i>Eswatini Environmental Authority</i> <i>Eswatini Standards Authority</i> <i>Eswatini Revenue Service</i></p>
Sector(s) addressed	<i>Instruction: Energy efficiency</i>
Technologies supported	<i>Household refrigerators</i> <i>Distribution transformers</i>
Implementation start date	<i>(14/01/2020)</i>
Implementation end date	<i>(31/10/2022)</i>
Total budget for implementation	<i>\$271,880</i>
Description of delivered outputs and products as well as the activities undertaken to achieve them. In doing so, review the log frame of the original response plan and refer to it as appropriate	<p>Several outputs were achieved during the course of the project. They were achieved through various activities that were planned and executed. A market assessment was completed on both refrigerators and distribution transformers (DTs). Furthermore, key national stakeholders were identified and the international consultant travelled to Eswatini to meet all of the mapped stakeholders. From this point the policy working group (PWG) was formed with the key stakeholders. The PWG then met to make policy related decisions during the project. The technical committees (TCs) for both refrigerators and DTs were formed, and the national standards developed under the processes defined by the Eswatini Standards Authority (SWASA). As part of the standard development MEPS, HEPS and energy labels were developed for refrigerators and MEPS and a label for DTs. In parallel several activities were performed related to the implementation of the project post standard development. The MV&E plan was developed for both refrigerators and DTs. Similarly, the consumer awareness campaigns were developed for both commodities. These were presented to the PWG during meetings together with the financial mechanisms that would be applicable in Eswatini, and the lessons learnt related to the above in other countries. A National Policy Roadmap was also developed outlining the implementation process and even developing an estimate budget and action plan for implementation. Trainings were conducted on refrigerators and DTs related to the standards and the process of compliance in the country. the financing mechanisms</p>
Methodologies applied to produce outputs and products	<ul style="list-style-type: none"> • <i>Market assessment including qualitative and quantitative data collection (through desktop research and interviews amongst other techniques).</i> • <i>Stakeholder mapping followed by structured interviews with key stakeholders.</i> • <i>Collaborative engagements with members of the technical committees and policy working group to enable effective adoption of national standards and the national policy roadmap.</i> • <i>Focused training on various matters (refrigerators, DTs, financing mechanisms, consumer awareness campaigns, etc.) to enable the national stakeholders to implement the project</i>

<p>Reference to knowledge resources</p>	<p><i>The following products were used:</i></p> <ol style="list-style-type: none"> <i>1. Draft paper on Enabling environments and challenges to technology development and transfer identified in Technology Needs Assessments (TNAs), Nationally Determined Contributions (NDCs), and Technical Assistance (TA) of the Climate Technology Centre and Network (CTCN) – used for background related to amount of background information and level of detail required for market assessment</i> <i>2. Assessment of Technology Transfer in Seychelles within the context of Climate Change – used for technology transfer ideas and techniques related to training in particular</i>
<p>Deviations</p>	<p><u><i>Instruction: The main deviations were the following:</i></u></p> <ol style="list-style-type: none"> <u><i>1. Delays in the delivery of outcome primarily caused by delays in obtaining and gathering information due to the Covid-19 disruptions</i></u> <u><i>2. Changes in the number of meetings held for certain activities. For example, fewer technical committee meetings were held as the standards were developed and agreed upon quickly but a greater number of training and workshop seminars were held as this was deemed to be more effective in reaching project outcomes.</i></u>
<p>Anticipated follow-up activities and next steps</p>	<p><i>The national stakeholders decided to formulate a Project Steering Committee (PSC) following the completion of the project in order to direct the project implementation as outlined in the National Policy Roadmap (NPR). The next steps will thus be as follows:</i></p> <ol style="list-style-type: none"> <i>1. Formal formation of the PSC with terms of reference and membership</i> <i>2. Development of the draft regulation related to refrigeration</i> <i>3. Following of the regulation development process as per the rules of the Kingdom of Eswatini</i> <i>4. Development of a proposal for funding from the CTCN related to project implementation.</i> <i>5. Implementation of the training outlined in the project (the trainers have been trained and the training will be disseminated throughout the various key organisations).</i> <i>6. Implementation of the consumer awareness campaigns once the funding is obtained</i> <i>7. Implementation of the product registration system for refrigerators and the implementation of systems related to the PRS and its implementation and monitoring.</i> <i>8. Implementation of the total cost of ownership models into procurement contracts of the EEC and other large purchasers of distribution transformers in the country.</i>

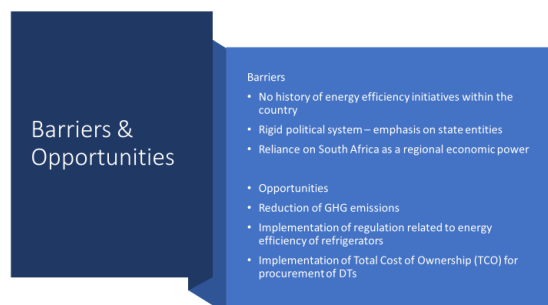
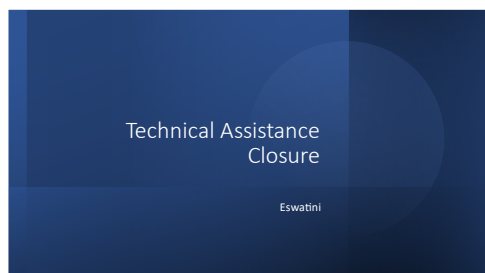
2. Lessons learned

	Lessons learned	Recommendations
Lessons learned from the CTCN TA process	<p><i>Some of the key lessons learnt were:</i></p> <ul style="list-style-type: none"> - Importance of physical meetings and their effectiveness - Importance of the understanding of the local stakeholders and their various responsibilities and goals 	<p><i>Recommendations include:</i></p> <ul style="list-style-type: none"> • Ensuring more physical meetings are planned for future projects with international experts • Considerations for increased understanding of local processes (i.e. regulatory, legal, stakeholders, communication, etc.)
Lessons learned related to climate technology transfer	<p><i>The experience of this project indicated that in future it would be key to:</i></p> <ul style="list-style-type: none"> - fully understand the various processes of the country (especially those related to standards development) prior to the start of the project. The project - Ensuring that experts are available for detailed training and understanding that some participants are not technical by background 	<p><i>Recommendations include:</i></p> <ul style="list-style-type: none"> • Ensuring that teams are made up of technical experts in the specific fields/technologies • As far as possible arranging physical interactions with national stakeholders • Having more meetings and transfer sessions related to implementation of the project post planning – trying to ensure that the plans are actually implemented and enabling national stakeholders to do so

3. Illustration of the TA and photos

For communication purposes, please provide 2-4 Power Point slides, including illustrations or charts, describing barriers, opportunities, methodology, activities, outputs and achieved results. The illustrations must be copied into the TA Closure report but must also be delivered as power point files. Also, please provide at least five high-resolution pictures in jpg format, capturing technical assistance. The pictures should illustrate how the TA has impacted the lives of the beneficiaries in particular and the communities in general.

Presentation slides





4. Impact Statement

The information in the table below will be used to communicate results and anticipated impacts of this technical assistance publicly. Please copy information from impact statement developed in the M&E Plan and update as relevant.

<p>Challenge</p>	<p><i>The project centred around the development of national standards related to minimum energy performance for both refrigerators and distribution transformers. The biggest challenges related to this task were the gathering of the data related to the current situation in the country and the assembling the representative collective of key national stakeholders that will be able to participate in the project. One of the main challenges with this process was that Eswatini is a relatively small country with few experts in this area.</i></p>
<p>CTCN Assistance</p>	<p><i>CTCN assistance was provided as follows:</i></p> <ul style="list-style-type: none"> - Project guidance and management through expert assistance - Assistance with stakeholder engagement and communication with the NDE and NDA - Physical visit to the country for the final meetings and training workshops, greatly assisting the national stakeholder

	<p><i>engagement in the process and future implementation.</i></p>
<p>Anticipated impact</p>	<p><i>This project is aimed at improving the energy efficiency of household refrigerators and distribution transformer in Eswatini.</i></p> <p><i>The deliverables of the project have been met. These include the development of the national standards, the MEPS, HEPS and the energy label as well as the development of the overall implementation plan (which includes the MV&E plan, consumer awareness campaign design, financing mechanisms plan and the national policy roadmap - NPR). From this point the national stakeholders will formulate a project steering committee to implement the plans outlined in the NPR.</i></p> <p><i>The impact will be the implementation of national standards for refrigerators and DTs. With the introduction of regulation the MEPS, HEPS and energy label will be implemented for refrigerators. This will mean that the refrigerators entering Eswatini or those manufactured in Eswatini will be more efficient than the majority of current ones. The public will also be educated in relation to energy efficiency and will start purchasing refrigerators based on their efficiency more. This will result in overall energy savings per household and for the country and will also mean a reduction in greenhouse gases being released into the atmosphere as a result of a reduction in electricity demand.</i></p> <p><i>In terms of DTs the national standard sets the MEPS and the main buyers have been trained on the importance of implementing TCO in their procurement processes. Again this will have an environmental and financial impact on Eswatini. The DTs purchased will therefore be optimised for operation and will be more reliable. They will have fewer losses and hence there will be a reduction in energy demand. Eswatini imports a lot of its energy from South Africa and some from Mozambique; and it will now be able to supply the same energy to clients but import less. South Africa generates its energy primarily from coal and hence Eswatini will save financially by importing less energy and the greenhouse</i></p>

	<p><i>gas emissions will be reduced as South Africa will need to generate less electricity.</i></p>
<p>Co-benefits: Achieved or anticipated co-benefits from the TA</p>	<p><i><u>Instruction:</u> Please indicate expected co-benefits as described in the response plan and in the relevant deliverables</i></p> <p><i>The expected co-benefits are a reduction in the greenhouse gases utilised by Eswatini. Eswatini purchases large amounts of its electrical energy from South Africa (which primarily generates electricity from coal). A reduction in energy usage whilst achieving the same results (through reduction of energy required to complete the same tasks) will mean a direct reduction in imports and thus a reduction in generation from coal and a reduction in related greenhouse gases.</i></p>
<p>Gender aspects of the TA</p>	<p><i><u>Instruction:</u> Please indicate if technical assistance was supported by a gender analysis. Describe gender aspects identified and additional considerations taken to mainstream gender (e.g. equal participation in trainings, gathering of gender-disaggregated data, etc.).</i></p> <p><i>The data collection related to refrigerators was performed on households rather than individuals. Therefore, there was no separation between genders. For distribution transformers the data collection was performed on transformer stock and thus not related to gender in any way. However, an equal participation in the PWG and TCs was attempted. The national stakeholders were encouraged to provide equal numbers of participants in relation to gender. Approximately 40% female participation was achieved on average in various committees and during training and workshops.</i></p>
<p>Anticipated contribution to NDC</p>	<p><i>The NDCs of Eswatini are focused on adaptation to contribute to the global mitigation effort to curb the effects of climate change. In relation to this Eswatini has a number of focus areas. The main target is to reduce economy-wide emissions by 5% by 2030 and Eswatini has committed to increasing this target to 14% with the aid of financial support. Eswatini is also aiming for adaptation and mitigation across sectors, including the increase in the share of renewables in the energy mix by 2030 relative to 2010. The focus areas also</i></p>

	<p><i>include: Agriculture. Water, Health, Ecosystems and biodiversity Infrastructure</i></p> <p><i>In terms of energy there is a focus on energy efficiency. Eswatini has committed to a reduction of electrical energy intensity by 20% by 2030 relative to 2010 figures. In order to achieve this Eswatini is committing to efficiency improvements that will reduce the speed of anticipated consumption growth.</i></p> <p><i>This project focuses on energy efficiency and is thus aligned with this strategy and will contribute to the NDC. The outputs of the project include:</i></p> <ul style="list-style-type: none"> <i>- Finalisation of national standards for DTs and refrigerators</i> <i>- Finalisation of energy label for refrigerators and label for DTs</i> <i>- Development of the NPR including the PRS for refrigerators and the guidance on the regulation and its implementation</i> <i>- Development of the financing mechanisms and consumer awareness campaign, which will provide public education on importance of energy efficiency and enable further development of energy efficiency among other commodities and products</i> <p><i>The NPR has been developed as part of the project and it creates an implementation plan for the Eswatini national stakeholders. Through the implementation of the NPR there will be a definite increase in energy efficiency of refrigerators and DTs, two commodities that are operational non-stop and thus contribute greatly to GHG emissions and thus a contribution to the NDCs.</i></p>
<p>The narrative story</p>	<p><i>Eswatini has no independent access to the coast/sea. Therefore, it is heavily reliant on use of South African ports for the import of essential commodities, including electricity, which is purchased from Eskom, the state-owned utility in South Africa. Eswatini is trying to reduce its reliance on South Africa and a part of this strategy is the increase in own generation as well as the reduction of electricity usage through higher efficiency.</i></p> <p><i>Furthermore, Eswatini is trying to reduce the impact of climate change on its environment. It is heavily reliant on farming (one of the main exports being sugar) and</i></p>

	<p><i>as such climate change has a major impact on its citizens and its overall economy. One of the ways that Eswatini is trying to address the challenges listed is through implementation of energy efficiency regulations and programmes. The target in this project is household refrigeration and distribution transformers. For refrigerators this is to be done through the development of MEPS, HEPS and the energy label, which will be implemented through regulation. For distribution transformers this will be achieved through the development of MEPS and the usage of the total cost of ownership tool by its electrical utility and other major purchasers of distribution transformers in their procurement processes ensuring that transformers on the Eswatini network are more efficient and the losses of electricity are reduced.</i></p>
<p>Contribution to SDGs</p> <p>A complete list of SDGs and their targets is available here: https://sustainabledevelopment.un.org/partnership/register/</p>	<p><i>To the extent possible, please describe contribution to approximately 3 SDGs, including SDG13, with a few sentences for each SDG concerned.</i></p> <p><i>This project will contribute to the achievement of a number of SDGs. Some of the key SDGs that will be contributed towards are:</i></p> <ol style="list-style-type: none"> <i>1. SDG 13 – Climate Action As outlined previously this project will reduce electricity consumption through improved energy efficiency in Eswatini. This will reduce the need for imports of electricity from South Africa – which generates the majority of its electricity from coal. Therefore, there will be a direct reduction in the number of greenhouse gases in the atmosphere and hence a reduction in the global warming potential of appliances in Eswatini.</i> <i>2. SDG 7 – Affordable and clean energy The greenest form of energy is energy saved. Therefore, through improved efficiency this project will result in the same processes being followed and outcomes reached (cooling of food stuffs for refrigerators and transfer of electricity for DTs) but through the use of less electrical energy. This will provide consumers with more affordable electrical energy as they will be paying for less electricity but achieving the same result.</i>

	<p><i>3. SDG 9 – Industry innovation and infrastructure</i></p> <p><i>The innovation related to the improvements of products (refrigerators and DTs) will improve their efficiency and performance. The implementation of MEPS forces manufacturers to improve their products in relation to energy efficiency. This has already happened with the majority of Eswatini’s DT suppliers (based in South Africa, which has implemented reduced losses several years ago). Additionally, many of the refrigerator suppliers are also improving their products due to the implementation of MEPS in the region. Eswatini has a refrigerator manufacturer, which has already improved their products as they export the majority of their refrigerators to South Africa and have committed to further improvements of refrigerators to align with the Eswatini MEPS and HEPS.</i></p>
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Annex 1 Technical assistance data collection

Please add quantitative and qualitative values for the indicators selected in the M&E plan and monitored throughout the technical assistance in the tables below. Indicators which have been monitored in addition to the proposed indicators below may be added at the end of table A. Non-relevant indicators should be left blank.

A. Output and outcome indicators

Indicator	Quantitative value	Qualitative description
Please note indicators below highlighted as anticipated	<i>Numerals only; disaggregates must sum to the total</i>	<i>List the various elements corresponding to the quantitative value as well as timelines and responsible institutions</i>
Total number of events organized by proponents and implementing partners	21	Events organised include meetings, training, standard development sessions and workshops
Number of participants in events organized by proponents and implementing partners	233	Total number of participants
a) Number of men	141	All from Eswatini
b) Number of women	92	All from Eswatini
Number of climate technology RD&D related events	6	Built into the training and PWG meetings
Number of participants in climate technology RD&D events	78	
a) Number of men	41	All from Eswatini
b) Number of women	37	All from Eswatini
Number of training organized by proponents and implementing partners	8	<ol style="list-style-type: none"> 1. Refrigerator Training 2. Distribution Transformer Training 3. Training on financing mechanisms 4. Overall training Q&A sessions <p>All trainings repeated</p>
Number of participants in trainings organized by proponents and implementing partners	88	
a) Number of men	51	All from Eswatini
b) Number of women	37	All from Eswatini
Total number of institutions trained	10	
a) Governmental (national or subnational)	6	<ul style="list-style-type: none"> - Ministry of Natural Resources and Energy - Ministry of Tourism and Environmental Affairs - Eswatini Electricity Company

		<ul style="list-style-type: none"> - Eswatini Energy Regulatory Authority - Eswatini Environmental Authority - Eswatini Standards Authority - Eswatini Revenue Service
b) Private sector (bank, corporation, etc.)	3	<i>Palfridge, Refrigerator repairer association, Ubombo Sugar</i>
c) Nongovernmental (NGO, University, etc.)	1	<i>University of Eswatini, Centre for Sustainable Energy Research</i>
Percentage of participants reporting satisfaction with CTCN training (from CTCN training feedback form)	N/A	N/A
Percentage of participants reporting increased knowledge, capacity and/or understanding as a result of CTCN training (from CTCN training feedback form)	N/A	N/A
a) Percentage of men	N/A	N/A
b) Percentage of women	N/A	N/A
Total number of deliverables produced during the assistance (excluding mission, progress and internal reports)	7	
a) Number of communication materials, including news releases, newsletters, articles, presentations, social media postings, etc.	0	<i>List the name of the documents</i>
b) Number of tools and technical documents strengthened, revised or developed	1	<i>Total Cost of Ownership for the purchase and utilisation of distribution transformers</i>
c) Number of other information materials strengthened, revised or created (For example training and workshop reports, Power Points, exercise docs etc.)	6	<ul style="list-style-type: none"> <i>Refrigerator Training</i> <i>Refrigerator standards presentation</i> <i>Distribution Transformer Total cost of Ownership presentation</i> <i>Distribution Transformer Training Financing Mechanisms Presentation</i> <i>NPR presentation</i>
Total number of policies, strategies, plans, laws, agreements or regulations supported by the assistance	N/A	N/A
a) Adaptation related	N/A	N/A
b) Mitigation related	N/A	N/A
c) Both adaptation- and mitigation related	N/A	N/A
Anticipated number of policies, strategies, plans, laws, agreements or regulations proposed, adopted or implemented as a result of the TA	6	
a) Adaptation related	2	<i>List the type of documents anticipated to be proposed, adopted or implemented</i>
b) Mitigation related	2	<i>List the type of documents anticipated to be proposed, adopted or implemented</i>
c) Both adaptation- and mitigation related	2	<i>List the type of documents anticipated to be proposed, adopted or implemented</i>

Anticipated number of technologies transferred or deployed as a result of CTCN support	2	<i>Instruction: List the type of technologies supported by this assistance. Technologies must be identified from the CTCN taxonomy of climate sectors and technologies (download in pdf format and choose from column C): https://www.ctcn.org/resources/ctcn-taxonomy <u>1. Energy efficient Appliances (refrigerators)</u> <u>2. Energy efficient DTs</u></i>
Anticipated number of collaborations facilitated or enabled as a result of technical assistance	<i>List total number here</i>	
a) Number of South-South collaborations	2	<i>List the names of the organisations (excluding the CTCN or TA implementers) Department of Energy of Eswatini and South Africa ESERA and NRCS (South African regulator for compulsory specifications)</i>
b) Number of RD&D collaborations		<i>List the names of the organisations (excluding the CTCN or TA implementers) SWASA and South African Bureau of Standards (SABS)</i>
c) Number of private sector collaborations		<i>List the names of the organisations (excluding the CTCN or TA implementers) Palfridge and SABS Ubombo and Transformer manufacturers based in South Africa (WEG, Actom, Revive, etc.)</i>
Number of countries with strengthened National System of Innovation as a result of CTCN support	1	<i>Eswatini</i>
Insert any additional indicators here		

B. Core impact indicators

Please fill in the tables for anticipated impacts of the CTCN assistance. Every technical assistance should contribute to at least one of the indicators below. For guidance on how to report on core indicators see the '[M&E Guidance Document for TA Implementers](#)'.

Core indicator 1	Anticipated metric tons of CO₂ equivalent (CO₂e) emissions reduced or avoided as a result of CTCN TA <i>Please add your calculations in word or excel format as an Annex to this Closure Report, where applicable.</i>
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	<i>The calculations were performed using the MEPSY tool and are presented in detail in the market assessment report.</i>	
	Anticipated metric tons of CO ₂ e reduced or avoided as a result of the TA on annual basis	Anticipated metric tons of CO ₂ e reduced or avoided as a result of the TA in total
Quantitative value (<i>emissions reductions</i>)	<i>Total number (numerals only, no rounding or abbreviations)</i>	<i>Total number (numerals only, no rounding or abbreviations)</i>
Unit	10 000 tCO ₂ e	100 000 tCO ₂ e
GHG assessment boundary (project emissions) Identify expected post-TA activities, associated effects and assess boundary for quantification of GHG emission reductions	<i>The national stakeholders committed to forming a PSC to implement the project post TA activities. This will include the development of the regulation for refrigerators, the implementation of procurement processes within the EEC for DTs and the implementation of the PRS for refrigerators with border checks and market surveillance. It will also include the implementation of the energy labels. All of these actions will lead to an improved energy efficiency of refrigerators and DTs. Eswatini will thus need to import less energy and less energy will have to be generated to provide the equivalent amount of energy to the users. The users will also be using less energy through refrigeration to achieve the same goal of refrigerated household goods. The net result is the reduction of GHGs from reduced energy generation requirements.</i>	
Baseline emissions Describe baseline scenario, baseline candidates, emission factors and emissions calculated	<i>The baseline emissions were also calculated using MEPSY using inputs gathered from the market assessment research. These include current refrigerator and DT stick, their current emissions based on type of refrigerator, refrigerant, volume, consumption, etc.</i>	
Methodology Explain the method or process of verifying the indicator and how data was gathered	<i>The data was gathered through the quantification of current electricity usage in the country. The sources of energy used were obtained and the calculation obtained in this manner.</i>	
Assumptions Describe assumptions made during calculation and quantification of GHG reductions	<i>The assumptions were based on extrapolations of refrigerators from the data gathered during the market assessment. Furthermore, assumptions were made on the DT data provided. Even though the majority of the DT data was up to date some assumptions related to sizes and distribution in rural areas had to be made</i>	

<p>Core indicator 2</p>	<p>Anticipated increased economic, health, well-being, infrastructure and built environment, and ecosystems resilience to climate change impacts as a result of technical assistance</p> <p><i>Please provide a qualitative description of the anticipated impacts on the categories below</i></p>
<p>Infrastructure and built environment Anticipated increased infrastructure resilience (avoided/mitigated climate induced damages and strengthened physical assets)</p>	<p>The refrigerator factory in Eswatini will be investing in some of its infrastructure to enable it to manufacture ore efficient refrigerators. There are currently no manufactures of DTs in Eswatini but it is possible that in the future (with the more aligned and regulated market in SADC in relation to efficiency and losses) a manufacturer can be established to supply the region.</p>
<p>Ecosystems and biodiversity Anticipated increased ecosystem resilience (areas with increased resistance to climate-induced disturbances and with improved recovery rates)</p>	<p>The reduction of energy usage will ensure that less energy needs to be generated. A reduction in energy generation and imports means a reduction in greenhouse gas emissions and a reduction in environmental damage. Additionally, generation of electricity from coal is highly water intensive. Eswatini either imports coal generated electricity or generates electricity from hydro sources. Both of these thus have an impact on water resources. In a relatively water scarce country the reduction of energy usage would directly improve water security.</p>
<p>Economic Anticipated increased economic resilience (e.g. less reliance on vulnerable economic sectors or diversification of livelihood)</p>	<p>The reduction of energy usage will have major economic impacts on Eswatini. The monthly electricity costs for households will be reduced and this will provide them with further disposable income. On the national level the costly imports of electricity will be reduced. This will provide Eswatini with additional income to be spent on other infrastructure projects. Furthermore, Eswatini has a refrigerator manufacturer and the implementation of MEPS and the energy label through regulation will protect it from cheap imports and will enable growth. It may even provide an avenue for a second manufacturer in the country.</p>
<p>Health and wellbeing Anticipated increased health and wellbeing of target group (e.g. improved basic health, water and food security)</p>	<p>With the reduction of imports of coal generated energy there are health benefits for the people situated close to the generating centres in terms of the air quality in the area. These are situated in South Africa. In Eswatini water security will be improved as there will be a reduced reliance on hydro generation. Additionally, with greater access to electricity and with refrigerators that consume less electricity the rural households will be able to afford refrigeration more readily (especially if the initial cost of purchase is supported as per the recommendations in the project) since the monthly electricity costs will be reduced. This would mean that they are able to purchase food in bulk and keep it refrigerated and reduce their monthly food spend.</p>

Core indicator 3	Anticipated number of direct and indirect beneficiaries as a result of the TA	
	Quantitative value	Means of verification
Total beneficiaries	12 (1.2 million)	
Number of adaptation beneficiaries	12	<i>The adaptation measures, although benefiting the entire country indirectly, will provide benefit for the specific organisations that have been involved in the project. The EEC will benefit from the reduction of imports that they</i>

		<i>are required to make. The Department of Energy will benefit through the reduction of demand, meaning an increase in security of supply. The department of trade and industry will benefit through the .</i>
Number of mitigation beneficiaries	1.2 million	<i>The entire country will benefit from mitigation measures. The implementation of the NPR will result in the development of the regulations related to refrigerator energy efficiency. Therefore, the population will benefit from more efficient refrigerators that are cheaper to use on a daily basis. Apart from the economic benefits the population will also benefit from the country's ability to ensure security of supply. South Africa is currently the largest exporter of electricity to Eswatini. South Africa currently has major electricity supply challenges. It has a contract with Eswatini until 2025 but after that it is highly likely that it will not be able to supply Eswatini with adequate electrical energy. Therefore, any energy savings that can be done presently will greatly benefit the electricity of supply in the coming years.</i>
Number of adaptation-and mitigation beneficiaries	1.2 million	<i>The entire population of Eswatini will benefit as a result. This is because all of the electrical energy in Eswatini flows through distribution transformers and as such improvements in efficiency means lower cost of electricity due to the reduction in losses. Furthermore, the majority of households that have electricity also possess refrigerators (electrification is at 84% and approximately 95% of those households have refrigerators – as per the market assessment report). Therefore, the implementation of MEPS will mean that in the near future all households will have at least a minimum efficiency of refrigerators, which will be an improvement in energy consumption and hence monthly electricity cost.</i>

Core indicator 4	Anticipated amount of funding/investment leveraged (USD) as a result of TA (disaggregated by public, private, national, and international sources, as well as between anticipated/confirmed funding)			
	Quantitative value confirmed in USD	Quantitative value anticipated in USD	Qualitative description <i>List the institutions, timelines, and description or title of the investment</i>	Methods <i>Describe methods used for quantification of funds leveraged</i>
Total funding	1 200 000)	2 400 000	1. Ministry of Natural Resources and Energy. Anticipated to invest into training and regulation development (within the next 12 months)	1. Estimated based on discussions during training, workshops and PWG meetings

			<p>2. ERS – anticipated to invest into training and border inspection services (over the next 24 months)</p> <p>3. ESERA – anticipated to invest into training and PRS process development and implementation</p> <p>4. CTCN – Eswatini is in the process of applying to the CTCN for funding related to project implementation.</p> <p>5. Palfridge – anticipated to invest into further testing and manufacturing capabilities as the only refrigerator manufacturer in Eswatini</p>	<p>2. Estimates based on the implementation budget developed as part of the project</p>
Anticipated amount of public funding mobilised from national/domestic sources	1 200 000	0	<p>1. Ministry of Natural Resources and Energy. Anticipated to invest into training and regulation development (within the next 12 months)</p> <p>2. ERS – anticipated to invest into training and border inspection services (over the next 24 months)</p> <p>3. ESERA – anticipated to invest into training and PRS process development and implementation</p>	
Anticipated amount of public funding mobilised from international/ regional sources	0	1 200 000	<p>CTCN – Eswatini is in the process of applying to the CTCN for funding related to project implementation.</p>	<p>Based on discussions in the final PWG meetings related to project implementation</p>
Anticipated amount of private funding mobilised from national/domestic sources	0	200 000	<p>Palfridge – anticipated to invest into further testing and manufacturing capabilities as the only refrigerator</p>	<p>Based on initial discussions with Palfridge representatives during</p>

			manufacturer in Eswatini	PWG meetings and NPR workshops
Anticipated amount of private funds mobilised from international/regional sources	0	0		

Annex 2 (for internal use – to be filled in by the CTCN)

CTCN evaluation

This section will be completed by the relevant CTCN Technology Manager.

- Evaluation of the timeliness of the TA implementation as measured against the timeline included in the response plan;
- Evaluation of TA quality as defined in the response plan;
- Overall performance of the Implementers;
- Overall engagement of the NDE and Proponent;
- Lessons learned on the CTCN process and steps taken by the CTCN to improve.